CIP White Paper

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Section 1 – Overview

The Department of Information Technology (DoIT) builds, manages and maintains City government information technology infrastructure and systems used by City departments to serve constituents, including data, telephone, and radio networks, website and Internet connections, television channel, data center facilities, servers, and storage. DoIT also manages/directs the development of designated projects on behalf of the City, other Departments, and other regional partners. DoIT's Capital Improvement Program (CIP) supports major maintenance, improvements, replacements and upgrades to the City's existing technology infrastructure and systems, as well as the development and implementation of new capacity and systems.

DoIT's Adopted CIP budget for 2011-2016 is $57.4 million. Funding comes from a number of sources including rates/allocations to City Departments and external partners, Cable Franchise Fees, collected reserve funds, bonds, and grants. The 2012 Proposed CIP is focused on routine equipment replacement and maintenance. Details are provided in the below table.

Program/Project Name	2012 Amount	Planned spending
800 MHz Radio Network Program	$ 513,500	Infrastructure upgrades
Alternative Data Center	$ 156,774	Server & Storage equipment
Computing Services Architecture	$ 1,622,524	Routine equipment (servers, storage & facility infrastructure) replacement/upgrades ($585K) and maintenance ($1,037K)
Data and Telephone Infrastructure	$ 1,064,343	Routine telephone replacement equipment ($367K), Telephone system conversion Yr-2 of 8-Yr plan ($520K), and maintenance ($177K)
	$ 1,302,666	Routine equipment replacement/Backbone upgrade/switches/intrusion detection system/routers/servers ($725K) and maintenance ($577K)
Fiber-Optic Communication Installation & Maintenance	$ 2,988,994	Fiber installation ($2.17M) and maintenance
Seattle Channel Maintenance and Upgrade	$ 36,623	Equipment replacement: Studio Cameras, Mayor Cameras, Video Tape Recorder replacement, Council Computer Graphics system and Studio High Definition Upgrade.
Department Total	**$ 7,685,424**	

Section 2 - Summary of Upcoming Budget Issues and Challenges

DoIT's CIP has grown steadily over the ten years of its existence, in line with the City's growing investment in information technology during that time period. Projects have been completed successfully and within time and budget. Close fiscal stewardship by DoIT has allowed us to make the most of our CIP funds: savings have been used to expand scope and/or complete additional efforts, and City funds have been used to leverage grant and external funding to maximum benefit.

DoIT's CIP has compiled a solid track record of successes. These include:

- Addition of a 4th 800 MHz site for regional radio system (1M)
- Replacement of the Interactive Voice Response (IVR) system (1.4M)
- Replaced the City's enterprise class servers and storage environment (2.9M)
- Installed Mobile Data Computers in police vehicles ($6M)
- SPD/SFD CAD and RMS System Replacements ($10+M)
- Installed 520 miles of fiber optic cabling.

While DoIT's CIP Program has been highly successful overall, the nature of technology ensures that there will be new investments and requirements as we move forward. These will create their own challenges, including:

- The City's growing investment in and dependency on IT requires an increasing commitment to fund the associated support and replacement costs. DoIT's budget and staffing have been reduced from $59 million and 217 employees to $49 million and 195 employees over the past three years. While efficiency improvements can account for some of the reductions, the bottom line is that as a City we are not investing sufficient dollars to properly operate, maintain and replace our technology infrastructure. Increasingly our decision making is driven reactively (which equipment or system is most in danger of failing) vs. proactively (what can be done to best improve effectiveness or efficiency?). At the same time, new technologies are rapidly being developed and adopted in the general economy. Constituents have expectations government will use these same kinds of technologies as adopted and used by private companies. The City needs to think creatively about how to meet the upcoming changes in technology and needs of departments and how best to fund these needs.

  To address this need, we are recommending the creation of a specific subfund for citywide IT initiatives (see Attachment A). This subfund could be used to pay off debt service on bonds issued and/or to fund initiatives directly. By focusing and restricting the subfund to projects/initiatives that do not have existing funding sources we would create a mechanism for funding new and/or less predictable IT initiatives. For example, there is an increasing business need and demand from both Departments and the public to provide City data and services in a mobile-friendly format (e.g., accessible via smart phone, tablet computers, etc.) We could issue bonds to pay project costs and then pay the debt service on the bonds with funding collected in this subfund.

  The subfund could be funded through multiple mechanisms and would be accumulated over

time. Like a rainy day fund, it might grow slowly in poor economic times, but additional revenue could be pushed to it when the economy improves and opportunity exists.

- Individual City departments continue to make technology decisions in the context of their own department, without referencing or considering efficiency or the costs to the City government as a whole. Departments continue to independently procure software/systems which perform the same or similar function, which results not only in higher upfront costs but duplicative, more expensive ongoing maintenance and operations. If we are going to achieve more efficiency and reduce costs as a City, future decisions will need to take into consideration how best to combine projects, approaches and efficiencies across Departments.

  To address this issue, we proposed the following:

  1. **Implement a new process in conjunction with FAS, requiring Chief Technology Officer approval/sign off on any major IT procurement BEFORE it begins.** Often, duplicative efforts between departments are not identified until late in the project when it is far more difficult to make changes or stop the effort. By implementing a check point early in the process, potential issues can be identified at a point where changes can more readily be made. We can use the existing MITIE (municipal information technology investment evaluation) criteria to determine which projects would be subject to this process.
  2. **Create an Executive Information Technology Board to review proposals for major IT Projects (CIP or otherwise) BEFORE they are funded (see Appendix B).** This Board would make recommendations to CBO and the Executive on the funding and management approaches for major projects. It would also provide a forum for Departments to learn about other Department's existing technologies, systems and initiatives which might be leveraged and used instead of launching a completely new project and acquisition process. Currently projects are often developed, approved, funded and well into implementation before either the CTO, CBO, or other Departments realize they are occurring. This limits opportunities for collaboration and cost-sharing. By learning about the efforts in advance, Departments may better coordinate efforts and achieve efficiencies and savings which might otherwise not have occurred.

- Rapid and major changes in technology. The continued rapid rate of change in technology presents a major challenge for the City. User demands (both internal staff and constituents) around technology continue to grow as available functionality expands exponentially. Capabilities which barely existed two years ago are now considered "must have" by both City staff and constituents (such as smart phone applications). Vendors regularly "de-certify" and stop supporting products the City relies upon, leaving us the choice of spending significant amounts of money to upgrade to supported products or risk running important/critical City functions on unsupported platforms. And IT Staff need to receive almost continual training to keep their skills current and relevant to the new systems in use by the City.

  The rapid rate of change makes longer-range planning (more than 2 years) for *specific* products/projects extremely volatile with a high margin of uncertainty and risk, creating challenges for the City's structured budget processes. As a City, we need to develop new methods to secure long-range funding for technology that can be adapted to rapidly evolving

and emerging needs. . We believe that the creation of the IT Reserve Fund proposed above would provide a strong tool for addressing this issue.

- Finally, on a more specific note, the City's Radio Reserves, managed within DoIT's CIP, have been underfunded for several years now. In a recent issue paper dated 6-7-11, we provided an overview of the complex issues surrounding the future of this reserve, and made the following recommendations:
    - Continue to collect a reserve for future replacement of public safety radios in the 2020 timeframe. This will require increasing collections by nearly $700K annually to the level of $1.6M per year.
    - Expand the purpose of the reserve to include potential use as matching funds for future federal (or other) grant funding to move to newer generations of public safety wireless technologies.
    - Consider expanding the purpose of the reserve to include planning for the continual replacement and upgrading of new classes of data/video wireless devices, such as the VMDTs presently in use in police patrol vehicles, and similar technology in the firefighting and emergency medical services. Appropriate adjustments would have to be made in both the collection and disbursement planning.

Section 3 - Thematic Priorities

In addition to supporting Mayoral and Council goals for the City, DoIT has several thematic priorities which drive its work and consequently its operating and CIP budgets. These are:

- ***Ensure reliable maintenance and operation of the technology tools and systems supporting City Departments' staff, missions, and services***. The reliable and continued operation of these systems is critical to the ability for City employees in all Departments to perform their work. As such, a majority of DoIT's CIP is expended on "Asset Preservation" and keeping these tools and systems up and operating.

- ***Keep City Technology and Data safe, secure and compliant***. The increasing "computerization" of the City's information and operations has been paralleled by a similar growth in the threats and risks to those systems and by a growth in laws and regulations associated with electronic data and systems. As a result, we are seeing a steady increase in the need for investments related to security and/or compliance with state/federal regulations/laws/requirements.

- ***Use Technology to make City government more accessible/accountable/transparent.*** With the rapid growth in the Internet and the associated tech-savvy nature of the population, there is an increasing expectation that the City's information and processes will be readily available via technology in near-to-real time.

- ***Improve Efficiency & Effectiveness***. From its earliest stages, the City has invested in technology to improve the efficiency and effectiveness of its staff in doing their jobs, and this continues to be a key driver for our investments. In addition, some technology investments can result in monetary savings and/or the ability to stretch limited resources further (e.g., virtualization of

servers).

- ***Investments/Foundations for the Future.*** A key part of DoIT's mission is to perform strategic planning for the City within the technology sector and to ensure that the City's technology investments move in sync with what is happening in the broader industry and world. This includes planning for and investing in key technology trends and emerging technologies as appropriate.

Section 4 - Project Selection Criteria

DoIT uses a multi-step process to identify and prioritize projects for inclusion in their CIP.

STEP 1: Identification of Technology Needs and Opportunities

In this step, needs and opportunities for technology investments are identified. Information is drawn from a number of sources, including:

- The Citywide Enterprise Technology Multi-Year Strategic Plan
- Citywide Technology Roadmaps (updated annually)
- Customer Requirements/Requests
- Asset Replacement Schedules
- Coordination with partners (regional efforts, vendor partners, etc.)

This step includes development of initial cost estimates & other resource requirements, potential timing, and dependencies.

STEP 2: Identification of CIP and Non-Discretionary Projects

In this step, items identified in Step 1 are filtered to determine if they are (1) CIP appropriate or not and (2) discretionary or not. Criteria for determining if they are CIP appropriate or not include:

- Overall dollar value
- Timeframe of implementation (e.g., multi-year project)
- Lifespan of investment
- Investment in/preservation of long-term infrastructure

Projects which are determined to be non-CIP in nature are moved over for consideration and ranking with other Department BIPS as part of the normal budget cycle.

Criteria for determining if they are Non-Discretionary include:

- Legally mandated (e.g., debt service, federal or state law/regulation changes, court orders, etc.)
- Urgent security or risk mitigation needs (e.g., major system failure, major security breach)
- Reimbursable services to others (e.g., DoIT manages a regional fiber consortium where the partners contract with/through us to get work done).

Projects which are determined to be Non-Discretionary are automatically included in our CIP and Budget Proposal. Discretionary Projects proceed to Step 3.

STEP 3: Prioritization of CIP Appropriate Discretionary Projects:

The projects remaining after Step 2 are then screened to determine if they are a match for DoIT's normal maintenance/upgrade/replacement programs within the CIP. Projects such as these tend to be smaller in scale (<$250,000), "like for like" replacements (e.g., old equipment replaced by new equipment with little to no functionality change) etc. These projects are rated by program managers based on criteria tailored to each program and implemented as annual funding allows.

Larger capital projects which are best implemented on a stand-alone basis due to the size and complexity of the project are evaluated and ranked separately based on the following criteria:

- Asset Preservation/Replacement/Maintenance
- Product Lifecycles
- Legal Requirements/Mandates
- Security/Risk Mitigation
- Reimbursable from other sources (other depts. or outside entities, grants, reserves?)
- Leveraging Opportunities
- Dependencies (on other Products, Equipment, etc.; also on staff/resource availability/long-term supportability)
- Internal Customer Demands (including capacity) – including Mayoral/Council Priority
- External Customer Demands – Citizens, businesses, etc.
- External Drivers (vendor changes, regional commitments, etc.)
- Efficiency/Effectiveness Improvements/Resource Savings/ROI
- Key Future Trend/Forward-Looking/Pro-active

The final result is a list of prioritized large capital projects which are included in DoIT's proposed budget for inclusion in our CIP.

Section 5 - Aligning Infrastructure with Planned Growth

At the present time, DoIT's CIP has no alignment with Urban Centers and Villages. As an internal service Department, the majority of DoIT's CIP funds the technology infrastructure which supports City employees. Thus, geographically, most of our investment aligns with the location of City employees and City facilities and will continue to do so in the future.

Section 6 - Future Projects/What is on the Horizon

As of the time this document is written, DoIT has identified a number of initiatives/issues which are on the horizon and will need to be addressed at some future point, but for which we do not currently have funding. A detailed list has been provided in the matrix as part of Section 4 of this document, which includes:

- **Infrastructure which requires replacement**. DoIT's CIP contains sufficient funding to cover routine replacement of lesser value items which occur every year (e.g., switches, mid-range servers, etc.). However, it is not funded sufficiently to cover the larger value (Data Center upgrades, Enterprise Computer & Storage), more intermittent, replacements necessary.

- **Long term Major Upgrades to Regional Radio System.** The City is part of a tri-county public safety radio system. The current technology platform is approaching phased obsolescence and will need to be replaced/upgraded. A three-county committee of elected and appointed officials is managing the work to explore options for this effort, including funding strategies. The current CIP does not include/address this effort.

- **Broadband.** The Mayor's office has identified the provision of broadband service to all City residences and businesses as a key priority for his administration. The City has conducted studies and is currently developing a high level business plan, but the current CIP does not include/address this initiative.

- **Software/systems which require replacement/upgrades.** Historically, funding necessary to upgrade or replace existing major software/systems (such as Email, desktop office applications, Interactive Voice Response (IVR) has been handled on a case-by-case and year-by-year basis. No permanent ongoing funding strategy exists for such efforts, yet several are on the near-term horizon, including Windows 7 upgrade, Email/Archiving upgrades, MS Office upgrade, and a replacement for the City's service desk workflow management system (HEAT).

- **Future growth in capacity due to customer demands/usage**. DoIT's CIP includes funding for replacement of existing capacity as described, but it does not include funds to cover the routine growth in capacity which the City experiences. Increased City usage of technology combined with external legal retention requirements effectively ensures a continued growth in certain areas (e.g., storage) of the IT infrastructure, which will need to be addressed in DoIT's CIP.

- **New technology = new investments.** The functionality offered by technology continues to change and expand rapidly. Inevitably the City will wish to take advantage of some of those opportunities to improve its services, effectiveness, efficiency, etc. Current opportunities which are not yet included in DoIT's CIP include expanded "mobility functionality" (e.g., providing services/utilizing smart phones, tablet devices, etc.), enhanced "collaboration functionality" (allowing better sharing of information and collaboration within the City and with citizens), and expanded/enhanced use of video technologies.

Section 7 - CIP Revenue Sources

DoIT's CIP has been funded through a variety of revenue sources, including:

- **Rates/Allocations:** There are multiple services within the department that are allocated based on a percentage of use for the service provided. In addition, services are billed using a basis for the service billed. For example, time and materials, # of dial tones/circuits, quantity of equipment and or actual costs. Costs for labor and materials in this category are also billed directly to projects supported by the department. In recent years, rates/allocations have accounted for an increasing percentage of DoIT's CIP funding.

- **State and Federal Grants:** Federal and state grants have been used to finance system replacements (CAD/RMS for SPD/SFD) and new capabilities. In some cases, DoIT has been the direct recipient of the funds; in others, we have managed grant-funded projects for customers. The use of grant funding for the DoIT CIP has been intermittent.

- **Cable Franchise Fees:** DoIT collects Cable Franchise Fees that are set in franchise agreements with the cable provider. Some of this revenue has been used to fund the O&M CIP Program which supports the Seattle Channel. Cable Fees have historically provided a minor (<1%) portion of DoIT's CIP program.

- **Reserves:** In some instances, DoIT's rates/allocations include the collection of funds which are accumulated and held in a reserve in DoIT's Operating Fund balance. Currently, this is only done for the 800MHz radio system, although it has been considered in other areas. Expenditures of these reserve funds appear in our CIP program. Historically, there is a low level of spending for ongoing O&M items, with intermittent large expenditures associated with major replacements/upgrades.

- **Private Dollars:** Private funding contributions to capital projects. In the past, DoIT projects have occasionally included funding from external non-public sources (e.g., the AMR funds received as part of the Fire/Police CAD/RMS projects). Such instances are highly intermittent, usually for relatively small dollar value, and not projected to continue at any appreciable level.

- **Levy:** In the past, DoIT received some CIP funding from a Levy for the development, acquisition and installation of the 800 MHz emergency radio communication system. The funds have all been assessed/collected, and mostly expended, with the remainder committed for this year. It is possible that the future replacement/upgrade of the county-wide radio system might involve a new Levy, but that will not be determined for some years to come. Outside of that possibility, no additional Levy funding is anticipated.

- **To Be Determined:** Occasionally, DoIT's adopted CIP includes future projects for which a specific funding source has yet to be specified. These projects will not go forward unless/until funding is secured.

Section 8 - CIP Spending by Major Category

The below table reflects DoIT's Adopted CIP Budget for 2011-2016.

DoIT	2011	2012	2013	2014	2015	2016	Total
Major Maintenance	2,616,283	2,686,474	2,761,329	2,889,157	2,998,653	3,016,757	16,968,653
(Funded) Equipment Replacement	3,140,734	2,822,436	3,618,134	3,152,114	3,351,231	3,413,994	19,498,644
(Funded) New Capacity/Ability	400,000		155,000	150,000	200,000	177,500	1,082,500
Unfunded Needs			810,000	3,170,000	1,719,572	505,711	6,205,283
PM Services for Projects	2,119,374	2,176,514	2,260,046	2,327,848	2,379,060	2,431,400	13,694,242
Software Upgrades							
Totals	**8,276,391**	**7,685,424**	**9,604,510**	**11,689,119**	**10,648,516**	**9,545,362**	**57,449,322**

- Major Maintenance: Includes major maintenance costs for equipment, software and fiber networks.

- Equipment Replacement (funded): Includes ongoing acquisitions of capital equipment in CIP programs that are regularly due for replacement based on the fixed asset system with a 3-10 year life. This also covers upgrades where the technology is no longer going to be supported by a vendor.

- New Capacity/Ability (funded): Includes projects that provide new capacity or ability (vs. the maintenance or replacement of existing systems/capabilities). The new Computing Services storage and the Seattle Channel project to convert to High Definition are included here.

- Unfunded Needs: Includes initiatives that will be required at a future date (such as enterprise server and storage replacement) but for which a specific funding strategy has yet to be determined.

- PM Services for Projects: Includes projects/initiatives where DoIT is providing project management services to other Departments and regional coalitions/entities, but does not generally own the resulting system/equipment/application. This includes construction and maintenance of fiber installations by regional partners, projects managed for other City Departments such as the CAD/RMS replacements in Police and Fire, and the Puget Sound Interoperability Communications project being managed on behalf of the regional 800MHz radio coalition.

- Software Upgrades: Includes acquisition/upgrade/replacement of major software/applications. With the change in accounting rules under GAAP, DoIT will be capitalizing major software acquisitions and including them in our CIP going forward.

APPENDIX A: PROPOSAL FOR AN IT RESERVE FUND

What: Create a designated subfund/reserve fund to be used for Citywide IT projects. This reserve would include revenue from various City funds, and it could only be used for IT projects with citywide benefits. Funds from this reserve could be used to pay debt service on bonds issued for IT projects and/or to fund projects directly. We recommend the following guidelines apply:

1) Use only for projects/initiatives identified in the City's 5-year strategic IT Plan and Roadmaps. These planning documents are developed through the citywide IT Governance structure and represent departmental business and technology expert consensus on the direction and priorities for City technology.

2) Apply only to projects/initiatives that do not have existing logical funding sources. For example, the Seattle Channel CIP is funded directly through Cable Franchise Fees. Other CIP initiatives (such as mainframe replacement) are historically funded through bonds/depreciation already built into DoIT rates. The point of this new subfund is to create a mechanism for funding significant new IT initiatives and taking advantage of rapidly developing new technologies.

How: We propose funding this IT Project fund through a combination of methods:

1) An increase in selected DoIT rate pools. This rate increase would apply to those cost pools where investments will be needed and to which these funds could apply. The rate increase will NOT apply to those pools where (1) an existing funding mechanism exists for CIP projects (Ex: Radio Reserves or Seattle Channel) or (2) to administrative/leadership rate pools. For bond repayment, different projects might impact different sets of rate pools.

2) Reallocation of funds from the DoIT Operating Fund. DoIT & CBO would conduct an annual review of the DoIT Operating Fund Balance & when appropriate, reallocate excess undesignated funds into the Reserve Fund instead. This process would also address recent audit concerns regarding the regular review & assignment of DoIT's fund balance.

3) Reallocation of savings/interest from other IT projects/initiatives. In the past, DoIT has successfully completed major initiatives under budget. Recently, for example, the radio handset replacement project has been completed with significant savings from the initial planning. This is a result of ongoing negotiations between DoIT and the vendors involved (Sprint/Nextel and Motorola) which have resulted in additional discounts and reimbursements several times. In this case, the "saved" funds have either been returned to the General Fund or the Public Safety Radio Reserve. In many cases, however, funds are drawn from Department or fund allocations, and savings could be shifted to this reserve fund.

Process: We propose to create the reserve as a subfund of 50410 and have it administered by DoIT. Use of the reserve funds would be governed through the normal budget/CIP process, and specifically through recommendations from the Executive Information Technology Board (see Appendix B). Using the existing budgetary process (including the supplemental if necessary), DoIT and departments would present a proposal for specific projects/initiatives to use the Reserve. Those proposals would be reviewed by Executive & adopted by Council within DoIT's CIP Budget. Only then could the money be expended.

APPENDIX B: PROPOSAL FOR AN EXECUTIVE INFORMATION TECHNOLOGY BOARD

What: Create an Executive Information Technology Board to review proposals for major IT Projects (CIP or otherwise) and make recommendations to the Executive on funding/approach. This will also provide a forum for Departments to learn about initiatives in other Departments that they might wish to collaborate in or leverage.

Who: The Board would be chaired by the CTO/Deputy CTO. Membership would include the Department Head or Deputy (Senior Business Leader) from SCL, SPU, SDOT, Police, Fire, and FAS, and a senior representative from CBO/the Mayor's Office.

Process: Departments would present a business case for new major IT investments to the Executive IT Board. [One of the first tasks for the Board would be to determine criteria for which investments should go through this process. However, we recommend using the existing MITIE (municipal information technology investment evaluation) criteria to determine which projects would be subject to this process.]

The Board will review the proposal for issues to include:

1) Compatibility with the stated City direction in IT as reflected in the Citywide IT Strategy and Roadmaps
2) Duplication/overlap of functionality/costs with other existing or proposed systems
3) Overall cost implications to the City both for initial acquisition/implementation and for ongoing O&M costs.

The Board will then make a recommendation to CBO/the Executive regarding proceeding with the project.